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ABSTRACT

A study examined the levels of comprehension generated by questions in story-related and story-retell activities in the Cooperative Integrated Reading and Composition (CIRC) program. A sample of 500 questions from CIRC materials for grades 4, 5, and 6 were classified. Results indicated that the majority of story-related and story-retell questions were classified in the literal category, although the questions for some stories required a substantial amount of inferential comprehension. Results also indicated that even when the inferential and evaluation categories were combined, the lower level of comprehension represented the largest percentage of questions. Findings suggest that writers of CIRC materials should make a deliberate attempt to include a balance of literal, inferential, and evaluative questions. (Contains 11 references, and one table and one figure of data.) (RS)

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LEVELS OF COMPREHENSION PROMOTED BY THE COOPERATIVE INTEGRATED READING AND COMPOSITION (CIRC) PROGRAM

Paper Presented at the Annual Conference of the Mid-South Research Association

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Levels of Reading Comprehension Promoted by the Cooperative Integrated Reading and Comprehension (CIRC) Program

Background and Statement of the Problem

A major goal of reading instruction, according to the outcomes stated at both the state and local levels, is to teach students to perform higher-level comprehension tasks such as acquiring and systematically arranging information, distinguishing relevant from irrelevant information, deciding how to use data, detecting cause and effect relationships, and the like. In recent years, such sophisticated goals added to the notion that reading is a thinking process that cannot be taught effectively through drill and repetitive practice alone. Concerning the importance of critical reading skills, Leu and Kinzer (1992) wrote: "In reading ... the learner's major objective is to develop, refine, and use high-level text thought processes - ultimately, to comprehend" (p. 2). Indeed, examination of reading instructional materials reveals that high-level comprehension is paramount among learner outcomes. Additionally, investigative commissions such as the *National Assessment of Educational Progress* (NAEP, 1987) and *Becoming a Nation of Readers* (1985) have placed heavy emphasis on critical thinking in reading.

The realization of this goal, however, is doubtful given the fact that elementary students receive a meager intellectual diet offering little more than decoding and literal comprehension tasks with basal readers. More often than not, teachers in elementary schools follow the dictates of published reading programs that emphasize isolated skill activities targeting decoding, vocabulary, and literal comprehension (Duffy & McIntyre, 1982; Durkin, 1979; Palmer, 1982). As Samuels and Farstrup (1992) stated:

> Often the teacher's role is primarily that of a technician who follows directions and prescriptions, rather than a decision-maker who engages in substantive pedagogical maneuvering in response to students' needs. However, drill and practice instructional models are inadequate for the new comprehension curriculum. This is especially true in a technological society - a society that will increasingly value workers who can solve problems over those who can follow prescribed routines. It is no longer good enough to have students answer literal questions and memorize isolated skill responses. (pp. 171-172)

It is well established in the literature that elementary teachers rely heavily on basal readers and the accompanying lesson plans for reading instruction. Although implementation differs among teachers, research demonstrates that published programs heavily affect classroom practices (Diederich, 1973; Durkin, 1984).

This would not pose a problem with reading instruction if basals contained effective lessons which promoted higher-level comprehension. However, published reading programs have remained virtually unchanged since the 1940s. While the graphics and attractive packaging have improved since the early days, basals still emphasize decoding at the expense of comprehension. The most traditional lessons employ the Directed-Reading Activity format which is skill-driven - that is, the objective of each lesson is to learn an isolated skill (which may or may not be relevant to understanding the story) rather than to comprehend a particular type of discourse. While students are held accountable for learning the skill through independent workbook practice and/or end-of-unit tests, they are seldom held accountable for the comprehension of the reading selection - except through questioning. Most analyses of questioning still indicate that teachers predominantly rely on literal or recall-only questions.

The weaknesses of basal reader programs prompt teachers to search for supplementary or replacement programs, if the school district allows such flexibility. The recent development of a cooperative learning program at Johns Hopkins University designed especially for reading and writing has been received enthusiastically by practitioners who are searching for more effective ways to teach reading. The Cooperative Integrated Reading and Composition (CIRC) Program (1992) is creating the same excitement among teachers as earlier Student Team Learning programs because of the positive effects on classroom climate, interest in reading, and student achievement (Slavin, 1990). A major portion of this program is the story-related activities which include Treasure Hunts that teach vocabulary, spelling and story grammar by requiring students to respond to questions. These Treasure Hunts may be used in conjunction with the story in basal series or with children's literature. After reading the story and discussing it in their heterogeneous reading groups, students summarize the major events of the story by responding to questions known as "Story Retell" with their partners.

The CIRC Program offers an innovative alternative to basal programs that will increase in popularity in coming years. Because of the interest in cooperative learning methods in both the professional literature and among practitioners, and given the fact that CIRC is a content-specific cooperative learning program in reading and writing, the materials should be analyzed to determine their emphasis on higher-level comprehension. Specifically, what levels of comprehension do most questions in CIRC materials promote?

Analyzing CIRC Materials

In an attempt to determine the levels of comprehension generated by questions in story-related and story-retell activities in the CIRC program, an analysis of questions was completed. The research examined the extent to which the CIRC materials emphasized higher-level comprehension. Further, this study examined if statistically significant differences existed between the number of literal-level questions and above-literal-level questions. It was hypothesized that there would be no significant difference between the frequencies of story-related and story-retell questions classified at the literal level and above-literal-level of comprehension.

Research Procedures

Treasure Hunts that accompany each story from children's literature in the CIRC materials for grades four, five and six were obtained from the Center for Social Organization, Johns Hopkins University. The sample consisted of 500 questions from the story-related activities and the story-retell section of the Treasure Hunts. The 500 questions were randomly selected prior to the analysis and extracted from all interrater reliability exercises and discussions. The three researchers had received training in how to use CIRC materials in a workshop conducted by a consultant from Johns Hopkins University. Additionally, both university professors teach Team Learning Methods and CIRC Methods in methods courses in elementary education and the other researcher is a classroom teacher in grade 6 and uses CIRC methods as a supplement to her reading program. Because of the researchers' familiarity with these materials, the story-related questions and the story-retell questions

were of most interest since these questions accompany the reading section of children's literature in the CIRC program and would replace the questions that accompany a reading selection in basal readers.

After extensive training in question classification with the levels of literal, inferential, and evaluative comprehension and obtaining an interrater reliability of .90 on a sample of questions not selected for the actual classification study, three raters independently classified 500 questions from the story-related or story-retell questions. Results of the classification were analyzed and are presented in a frequency distribution table and bar graph. The chi-square statistic was selected to test the proposed hypothesis.

Findings and Conclusions

To represent the data, answer the research question, and test the proposed hypothesis, the study utilized a bar-graph comparison, frequency distribution table, and the chi-square goodness-of-fit analysis. The chi-square goodness-of-fit analysis was employed to determine if the observed frequency differed form that expected by chance.

The first research question asked: What levels of questioning are promoted by story-related and story-retell questions in CIRC materials? In order to answer this research question, the following null hypothesis was tested: There is no significant difference between the frequencies of the questions classified at the literal-level and the above-literal-level. Each question randomly selected for classification was rated independently by three trained raters. The results of the ratings were compared and the question was placed in the category ascribed by the the majority of raters. In the actual

classification study, the raters reached total agreement on 90% of the questions. Table 1 reports the the frequency distribution of the results of this classification.

Table 1
Frequency and Percentage of Story-Related and Story Retell Questions
For CIRC Materials According to the Level of Comprehension

	CIRC Story-Related and Story Retell Questions	
Comprehension Level	n	%
Literal	304	61
Inferential	140	28
Evaluative	56	11
Total	500	100

Note. *Percentages are rounded to nearest whole numbers.*

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Inspection of these data indicate that the majority of story-related and story-retell questions that accompany CIRC materials were classified in the literal category. The overall frequency distribution and percentage tabulation reveals that of all 500 questions randomly selected for analysis, 304 (61%) dealt with literal comprehension. The second largest percentage of questions were categorized as inferential 140 (28%). Only 55 (11 %) of the questions fell into the evaluation category.

Although these findings indicate that the total observed frequencies were largely in the literal category, comparisons among individual Treasure Hunt guides yield important differences that should be discerned.

For example, the data show that some Treasure Hunts contained questions that were exclusively literal, while a few Treasure Hunts contained questions that required a substantial amount of inferential comprehension. This trend of inferential and/or evaluation questions were represented in the following Treasure Hunts: (a) Hello, My Name is Scrambled Eggs; (b) A Thief in the Village; and (c) Anastasia Has the Answers. The Treasure Hunts that accompany these novels require comprehension beyond what is stated in the text and ask readers to make a critical judgment about information from the literature. Closer inspection of these teacher's guides indicates that most answers to the questions are listed as "Answers Will Vary" or "Accept any Reasonable Response."

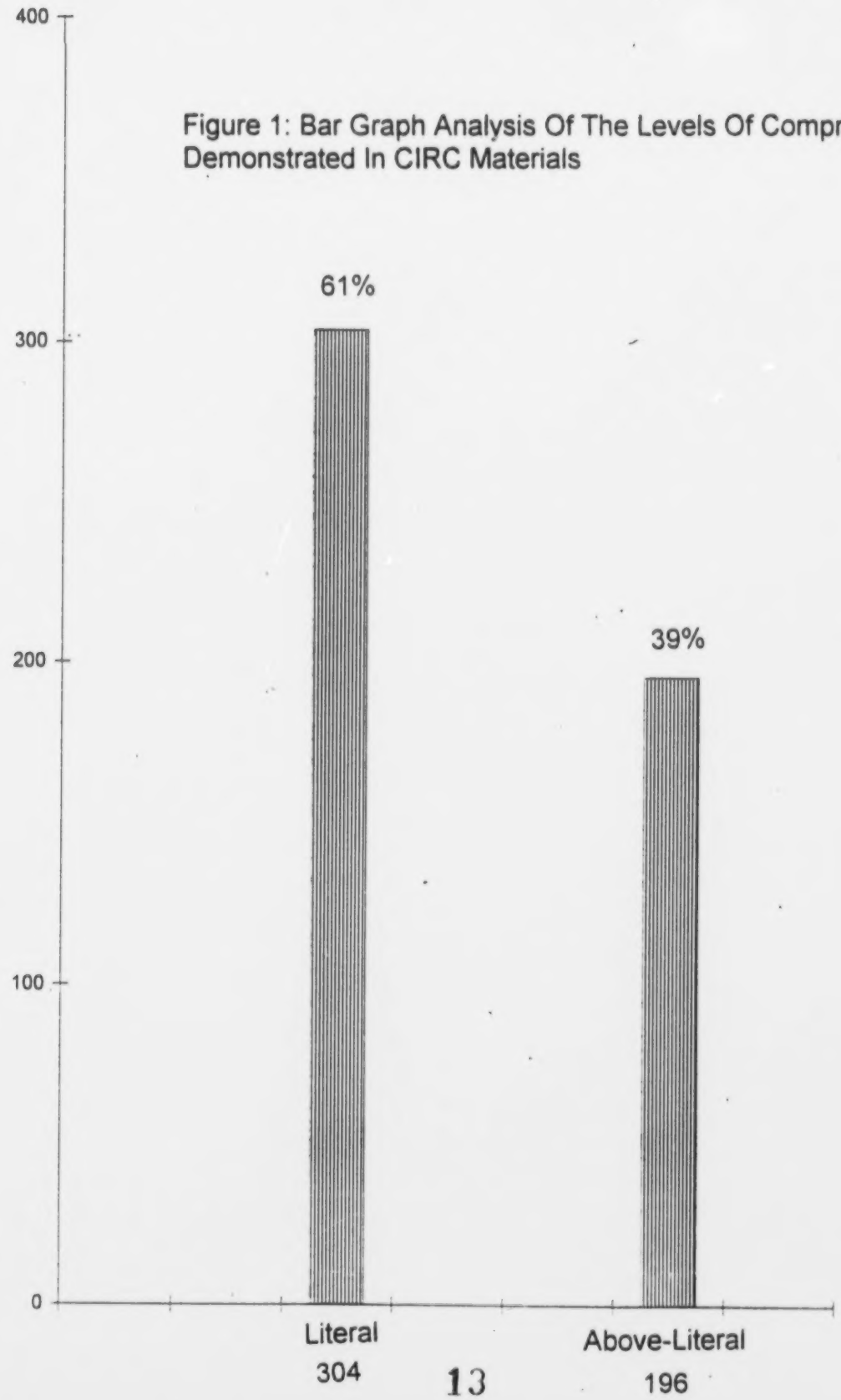
The levels of comprehension in these Treasure Hunts promote critical reading and comprehension beyond mere literal events in the story. It is unusual; however, that these types of questions would exist in only a few of

the many Treasure Hunts analyzed and are so concentrated in these three. It is encouraging to know that these types of questions can and do abound in the CIRC materials.

The second research question asked: To what extent do the CIRC questions emphasize higher-level comprehension? To answer this question, the data were dichotomized into two major categories: lower-level and higher-level. Lower level comprehension refers to the literal level and higher-level comprehension represent the inferential and evaluation categories combined. By collapsing the inferential and evaluation categories into one major category, it is possible to analyze the emphasis of each question on understanding and application of information (higher-level) as compared to rote memorization (lower-level). The resulting data were tabulated and the percentages were calculated (see Figure 1). These results indicate that, even when the inferential and evaluation categories are combined for examination, the lower level of comprehension represented the largest percentage of questions. It should be noted that the largest percentage of higher level questions were judged as inferential (28 %).

To test the null hypothesis, a chi-square goodness-of-fit analysis was calculated to determine if the observed differences between the total frequencies of questions (literal level vs. above-literal level) departed significantly from those expected by chance. Because the chi-square value of 23.33 exceeds the critical chi-square value beyond the .001 level, the null hypothesis is rejected. This statistic indicates that the distribution of

Figure 1: Bar Graph Analysis Of The Levels Of Comprehension Demonstrated In CIRC Materials



total frequencies for the literal-level and above-literal-level questions departed significantly from a distribution based on change alone. Therefore, CIRC Treasure Hunts include significantly more literal comprehension questions than above literal-comprehension questions.

Implications

It should be noted that CIRC consists of three main elements: (a) Story-Related Activities; (b) Direct Comprehension Skill Lessons; and (c) Integration of Language Arts and Writing. Because the story-related activity would replace the traditional Directed Reading Lesson in the basal, this research investigated the levels of comprehension promoted by the CIRC materials (i.e., Treasure Hunts) that accompany the reading of a story from children's literature.

Although the story-related activities are considered the main element in these materials, it should be noted that not every aspect of the CIRC program was examined in this analysis and that the findings are limited to the story-related activities. It is conceivable that higher-level comprehension is promoted in the direct comprehension skill lessons or the activities that integrate writing.

These data reveal that students are exposed to a preponderance of literal comprehension questions when using the story-related and story-retell activities. It is recognized that the acquisition of literal events precedes functioning at higher cognitive levels; however, the emphasis given to mere recall of story events is excessive for a program of this distinction. If the goal of reading is to promote recall of literal events without interpretation,

application, or evaluation then the questions contained in the CIRC materials will suffice. However, if the goal of reading is higher-level comprehension, then the questioning strategies in CIRC story- related materials need to be revised to include a balance of literal and higher-level (i.e., inferential and evaluation) questions.

As stated earlier, the type of question used by teachers strongly affects what children learn to think about while reading. If literal details receive the emphasis in a teacher's questioning, then children learn to attend to details as they read (Anderson, 1985). Therefore, repeatedly asking the same type of question cues students to focus on the details needed to answer the question, and they allocate their attention accordingly. On the other hand, studies (e.g., Pearson, 1985) show that making inferences and evaluations results in improvement in these types of thinking, without a loss and perhaps even a gain, in literal comprehension. Research indicates that the active manipulation of literal events enhances retention.

Data in this study imply that students can answer the questions that accompany the story with little or no true understanding of the elements involved. Developing higher levels of comprehension while engaging a reader with a story requires a more logical progression through all the levels of questioning and more attention to inferencing and evaluation.

The results of this study should be particularly beneficial to writers of CIRC materials, especially those involved in developing Treasure Hunts. It is recommended that writers make a deliberate attempt within each Treasure Hunt to include a balance of literal, inferential, and evaluative questions.

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